

WHAT IS CLAIMED IS:

1. A method of drilling a wellbore, comprising:

5 obtaining raw drilling data and information which collectively represents captured and stored organizational drilling experience including drilling knowledge and drilling experience;

10 providing an ontology of defined concepts and relationships which relate to and describe drilling operations;

15 organizing said raw drilling data and information into a database in accordance with said ontology and in a data processing format;

20 providing an interface constructed of data processing instructions in a data processing format for receiving operator queries based upon user-specified criteria and for relevant or analogous knowledge or experience as an output in a human-readable format;

25 loading said database and said interface into at least one data processing system;

30 receiving at least one user query relating to a particular drilling situation and in user-specified criteria;

utilizing said at least one data processing system to retrieve from said database relevant or analogous drilling knowledge or experience utilizing said ontology and said user-specified criteria;

utilizing said interface to provide said relevant or analogous drilling knowledge or experience to an operator;

35 utilizing said relevant or analogous drilling knowledge or experience to make drilling decisions during drilling operations.

2. A method of drilling a wellbore, according to claim 1, wherein said ontology is a descriptive logic.

5 3. A method of drilling a wellbore, according to claim 2, wherein said ontology is a LOOM ontology.

10 4. A method of drilling a wellbore, according to claim 1, wherein said ontology is composed of a plurality of base concepts and base relationships which may be combined to construct more complex concepts and complex relationships.

15 5. A method of drilling a wellbore, according to claim 1, wherein said raw drilling information is organized in a subsumption hierarchy.

20 6. A method of drilling a wellbore, according to claim 1, wherein said raw drilling information is organized in accordance with at least the following concept categories:

25 historical experience;

30 wellbore environment factors; and

35 downhole equipment.

40 7. A method of drilling a wellbore, according to claim 6, wherein said historical experience includes a plurality of factors which describe a particular historical drilling situation and associated outcome.

45 8. A method of drilling a wellbore, according to claim 6, wherein said wellbore environment factors include at least one of the following factors:

50 drilling fluid properties;

55 rock properties; and

60 formation attributes.

9. A method of drilling a wellbore, according to claim 6, wherein said down hole equipment category includes at least one of the following items:

bottomhole assembly components; and

5

drill bit components.